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with more or less heavy spar, the whole capped by a bed of crystalline heavy spar, including galena. The 3d Magnesian limestone is also metalliferous, and holds in drusy cavities crystals of pyrite and chalcopyrite. It sometimes contains more than the proportion of magnesian carbonate required to form dolomite, a not very common circumstance.

The coal measures of the state, belonging chiefly to the great western coal-field, and occupying an area of nearly 23,000 square miles, are described by Mr. Brodhead with much detail. The coal seams are generally thin, though some in the lower measures occasionally attain four feet. Their local value is very great from the scarcity of wood, and we are told in one place of a seam of from ten to fourteen inches which is wrought, the coal being sold at the mine for twenty cents a bushel. In regions where the product commands so high a price even small seams are precious. The coal deposits of Lincoln county in the eastern part of the state, belong, unlike those just referred to, to the central or Illinois field, and present the unusual character of detached basins of coal, sometimes twenty-five feet in thickness, with little or none of the usually accompanying strata, occupying depressions or previously excavated basins in the Lower Carboniferous limestone. These basins are very limited in extent, and have but a local importance.

The discussions of the various points with regard to the economic geology of the state, the chemical investigation of its iron ores, and the valuable appendix or investigations on the strength of building materials, all of which show good and thorough work alike for science and for the material advancement of the state, would occupy too much of our space. Since the regretted resignation of Prof. Pumpelly, on account of ill health, the direction of the survey has been confided to Mr. Brodhead, whose report for 1873, we have just received and shall soon notice. The beautiful atlas of maps which accompanies the report of 1872 should not pass unnoticed. These maps are from the establishment of Mr. Julius Bien of New York, who, by the admirable style of his work, has put all students of geology and geography under obligations to him.—T. S. H.

RELATION OF BRITISH WILD FLOWERS TO INSECTS.¹—The author prefaces his little work with the information that his observations

¹On British Wild Flowers considered in Relation to Insects. By Sir John Lubbock. Nature Series. With numerous illustrations. London, Macmillan & Co. 12mo. pp. 179. 1875. Price \$1.50.

and notes on this subject were originally prepared with the view of encouraging in his children that love of natural history from which he himself had derived so much happiness. A child can readily understand the happy and clear exposition of the subject contained in the pages of this most attractive book. And this is the way natural history should be presented to children. It leads them to take at once a lively interest in the doings of insects and plants, and is worth far more than formal introductions to zoology, just as one can learn more by watching the actions of a live bee or the growth of a plant, than by the inspection of dried specimens.

Children of maturer growth will be startled and set thinking by some of the conclusions of Sprengel, Darwin, Hermann Müller and our author. For example, we are told that to bees and other insects "we owe the beauty of our gardens, the sweetness of our fields. To them flowers are indebted for their scent and colour; nay, for their very existence, in its present form. Not only have the present shape and outlines, the brilliant colours, the sweet scent and the honey of flowers, been gradually developed through the unconscious selection exercised by insects; but the very arrangement of the colours, the circular bands and radiating lines, the form, size and position of the petals, the relative situations of the stamens and pistil, are all arranged with reference to the visits of insects, and in such a manner as to insure the grand object which these visits are destined to effect." The facts tending to substantiate these conclusions are presented by word and picture. We are confident that books like these are destined to revolutionize the study of biology in our schools.

ELEMENTS OF MAGNETISM AND ELECTRICITY.¹—This compact little manual like the "Principles of Metal Mining," is an English reprint. It is printed with the object of aiding students to pass "in the first class in elementary stage of the government science-examinations." It will be a useful reprint in this country.

BOTANY.

GEOGRAPHICAL DISTRIBUTION OF NORTH AMERICAN FERNS.—An interesting paper on this subject by Mr. J. H. Redfield appears in the Bulletin of the Torrey Botanical Club. The last volume contains an excellent photograph of the late Prof. Torrey.

¹ Elements of Magnetism and Electricity, etc. By John Angell. With 120 illustrations. New York, G. P. Putnam's Sons. 8vo, pp. 176. Price 75 cents. For sale by A. A. Smith & Co., Salem, Mass.